ATTACHMENT 2
DATA QUALITY ASSESSMENT SUMMARY

GeoEngineers

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MEMORANDUM

TO: Cindy Bartlett and Rob Leet

FROM: Tonya Kauhi

DATE: October 29, 2008

FILE: 5147-007-03

SUBJECT: Former Scott Paper Mill Site – Data Quality Assessment Summary

This memorandum presents a summary of the analytical data quality assessment for soil and water samples collected by GeoEngineers, Inc. on September 8-10, 2008, at the Port Uplands Area of the Former Scott Paper Mill Site in Anacortes, Washington. The samples were submitted to Analytical Resources, Inc. (ARI) in Tukwila, Washington. Chemical analyses were performed by ARI and two laboratories subcontracted by ARI: Fremont Analytical (Seattle, Washington) and Pace Analytical (Minneapolis, Minnesota). Thirty-nine (39) soil samples and two (2) water samples were analyzed by one or more of the following analytical methods:

- Total metals by EPA Method 6020
- Lead by EPA Method 1311/6020 (TCLP extraction)
- Petroleum hydrocarbons by Ecology Method NWTPH-D
- Polycyclic aromatic hydrocarbons by EPA Method 8270-SIM
- Dioxin/furans by EPA Method 8290

OBJECTIVE

The objective of the data quality assessment was to review laboratory analytical procedures and quality control (QC) results to evaluate whether:

- The samples were analyzed using well-defined and acceptable methods that provide detection limits below applicable regulatory criteria;
- The precision and accuracy of the data are well defined and sufficient to provide defensible data; and
- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

DATA ASSESSMENT CRITERIA

The following QC elements were reviewed:

- Chain-of-custody (COC) documentation
- Temperature preservation and holding times
- Method blanks
- Surrogate recoveries

- Matrix spikes/matrix spike duplicates (MS/MSD)
- Laboratory control samples
- Laboratory replicates/duplicates

DATA QUALITY ASSESSMENT SUMMARY

The results for each of the QC elements are summarized below. The data assessment was performed using guidance in *the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA 2002) and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 1999).

Chain-of-Custody Documentation:

COC forms were provided with the laboratory analytical reports. There were no anomalies noted on the COC forms; proper COC protocols appear to have been followed.

Temperature Preservation and Holding Times:

According to the cooler receipt form, the measured cooler temperatures were 20.8 (cooler #1) and 18.6 (cooler #2) degrees Celsius. Guidance suggests that when temperatures exceed the acceptable range, non-detect results should be qualified as unusable ("R" flag) and detected results should be considered estimated values and qualified with a "J" flag, based on the reviewer's professional judgment. The basis for rejection depends on a variety of factors including the duration of elevated temperatures, the magnitude of the temperature exceedance, the matrix being analyzed, the amount of head space in the sample container, and the class of target analytes (i.e., non-volatile or semivolatile compounds versus volatile compounds).

In this instance, the samples were stored on ice from the time the samples were collected until they were delivered to the analytical laboratory. On the afternoon that the samples were delivered to the laboratory, the samples were transferred to different coolers and repacked with ice approximately 2 hours before the coolers were dropped off at the laboratory. The laboratory measured and recorded the ambient cooler temperatures, not the temperature of the samples. Since it can take approximately 6 to 8 hours for ambient cooler temperatures to reach the recommended temperature range of 2 to 6 degrees Celsius after being loaded with ice, the measured cooler temperatures likely did not accurately reflect the temperature of the samples. Accordingly, no data were qualified based on temperature preservation.

Samples GEI23-6-10 and GEI23-10-14 were extracted and analyzed outside of the recommended holding time of 14 days. The samples were extracted within 41 days of sampling. Guidance suggests that if holding times are grossly exceeded (e.g., by greater than two times the recommended holding time), non-detect results should be qualified as unusable ("R" flag) and detected results should be considered estimated values and qualified with a "J" flag. Based on these criteria the following actions were taken:

- The non-detect results for benzo(a)anthracene in sample GEI23-6-10 were qualified as unusable ("R" flag), and the detected results for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)-fluoranthene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene in sample GEI23-6-10 were qualified as estimated ("J" flag).

- The detected results for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene in sample GEI23-10-14 were qualified as estimated ("J" flag).

All other samples were analyzed within recommended holding times.

Method Blanks:

Several polychlorodibenzo-p-dioxins/polychlorodibenzofurans (PCDD/PCDF) congeners were detected in an associated method blank sample (Blank-17755). Since the sample results for these congeners were greater than five times the blank result, the sample results were not qualified.

No additional method blank detections were reported.

Surrogate Recoveries:

Surrogates are only evaluated for organic analyses. No surrogate recovery exceedances were reported.

Matrix Spikes/Matrix Spike Duplicates (MS/MSD):

No MS/MSD spike exceedances were reported.

Laboratory Control Samples (LCS):

No laboratory control sample spike exceedances were reported.

Laboratory Replicates/Duplicates:

The relative percent difference (RPD) values for lead exceeded the control limit of 30% in sample GEI22-6-9 due to sample matrix effects. Guidance suggests if the results from a duplicate analysis exceed the control limit, detected results should be qualified as estimated ("J" flag), and the reporting limit for non-detect results should be qualified as estimated ("UJ" flag). Based on these criteria, the detected lead result in sample GEI22-6-9 was qualified as estimated ("J" flag).

No additional laboratory replicate exceedances were reported.

Additional Data Quality Issues:

The laboratory flagged several PCDD and PCDF results with an "I" (interference present) or "E" (polychlorinated diphenyl ether [PCDE] interference) where interfering substances reduced confidence in the sample result. Consequently, we qualified the results for the samples listed below as estimated ("J" flag).

Sample Location	Start Depth (Feet)	End Depth (Feet)	Analyte
GEI-1	2	6	1,2,3,7,8,9-HxCDD
GEI-1	10	14	1,2,3,7,8-PeCDD
GEI-1	10	14	2,3,7,8-TCDF

GEI-1	10	14	2,3,4,7,8-PeCDF
GEI-1	2	6	1,2,3,7,8-PeCDF
GEI-1	2	6	1,2,3,6,7,8-HxCDF
GEI-1	10	14	2,3,4,6,7,8-HxCDF
GEI-1	10	14	1,2,3,4,6,7,8-HpCDF
GEI-1	2	6	1,2,3,4,7,8-HxCDF
GEI-1	10	14	1,2,3,4,7,8-HxCDF
GEI-2	6	10	1,2,3,6,7,8-HxCDF
GEI-2	6	10	2,3,4,7,8-PeCDF
GEI-2	6	10	1,2,3,6,7,8-HxCDD
GEI-2	6	10	1,2,3,7,8-PeCDD
GEI-2	6	10	1,2,3,4,7,8-HxCDF
GEI-2	6	10	1,2,3,4,6,7,8-HpCDF
GEI-3	6	10	1,2,3,4,7,8-HxCDF
GEI-3	6	10	2,3,4,7,8-PeCDF
GEI-3	10	14	2,3,4,7,8-PeCDF
GEI-3	6	10	2,3,7,8-TCDF
GEI-3	10	14	1,2,3,7,8,9-HxCDD
GEI-3	10	14	1,2,3,4,6,7,8-HpCDF
GEI-3	10	14	2,3,4,6,7,8-HxCDF
GEI-3	10	14	1,2,3,7,8-PeCDF
GEI-4	6	10	1,2,3,6,7,8-HxCDF
GEI-4	6	10	2,3,4,6,7,8-HxCDF
GEI-4	6	10	1,2,3,6,7,8-HxCDD
GEI-4	6	10	1,2,3,7,8-PeCDD
GEI-4	6	10	1,2,3,4,6,7,8-HpCDF
GEI-5	6	10	1,2,3,4,7,8-HxCDF
GEI-5	6	10	1,2,3,7,8-PeCDD
GEI-5	6	10	2,3,7,8-TCDD
GEI-6	6	10	2,3,7,8-TCDF
GEI-6	6	10	2,3,4,7,8-PeCDF
GEI-6	6	10	1,2,3,4,7,8-HxCDF
GEI-8	6	10	2,3,4,6,7,8-HxCDF
GEI-8	6	10	1,2,3,4,7,8,9-HpCDF
GEI-10	6	10	1,2,3,6,7,8-HxCDF
GEI-12	6	10	1,2,3,7,8-PeCDF
GEI-12	6	10	1,2,3,7,8,9-HxCDD
GEI-12	6	10	1,2,3,4,7,8-HxCDD
GEI-13	6	10	1,2,3,4,7,8-HxCDD
GEI-13	6	10	1,2,3,7,8-PeCDF

CONCLUSIONS

The analytical data generated during the September 2008 supplemental soil investigation at the Port Uplands Area of the Former Scott Paper Mill Site are useable for decision-making purposes. This data quality assessment was performed by GeoEngineers, Inc. using best professional judgment. Data users may review and re-interpret data quality for specific uses.